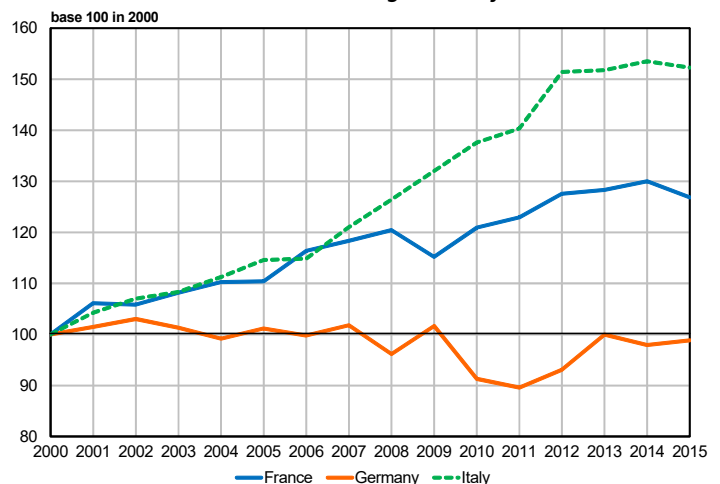


## Input costs and competitiveness in France, Germany and Italy

- Price dynamics in sectors sheltered from international competition, particularly services, directly affect producer prices and the competitiveness of manufacturing firms via the cost of inputs used to produce manufactured goods.
- Prior to the financial crisis (2000-2007), buoyant service prices in France and Italy exerted upward pressure on the prices of manufactured goods. Specifically, the strong rise in service labour costs impacted industry via higher service selling prices. In Germany on the contrary, wage moderation and deregulation in the professional business services sector (accounting, legal services, architecture and engineering) reined in rising service input costs in manufacturing during the same period.
- In this context, French and Italian manufacturers have cut their margins to curb producer prices. Concurrently, in Germany, firms were able to significantly boost their margins because of the weak cost increases in manufacturing – both in terms of labour costs and intermediate input costs.
- French manufacturing's efforts to tighten margins allowed it to keep its prices in line with Germany. In Italy, these efforts were not sufficient to preserve price competitiveness, which also deteriorated as a result of strong unit labour cost (ULC) momentum in the manufacturing sector itself, in contrast to France.
- Between 2010 and 2015, service input costs rose more moderately in France and helped rebuild the margins of industrial companies, while ULCs tended to steepen in Germany for both manufacturing and services. In Italy, the still relatively buoyant input costs prevent manufacturers from significantly restoring their margins, even though the country is no longer losing price competitiveness against Germany.

**Unit cost of intermediate consumption of services in the manufacturing industry**



Source: Destatis, INE, Istat ; DG Trésor calculations.

# 1. The cost of intermediate consumption accounts for approximately ¾ of the value of manufacturing industry output

From an accounting point of view, the value of goods produced by companies can be broken down into:

- Production costs: wage costs and the cost of intermediate consumption.
- Taxes on production, net of subsidies.
- The producer's margin.

In 2010, input costs in France accounted for 71.5% of the value of output in the manufacturing sector, a figure that

was similar in Italy and Germany. Companies have difficulty adjusting input costs in the short term - even if in the longer term they can adapt their production methods to reduce their dependence on a product whose cost would have risen sharply. This is particularly true for non-manufactured inputs, which account for about one quarter of the value of manufactured goods produced in France, Germany and Italy and among which service and energy inputs are in the majority.

## Box 1: Methodology

It is possible to disaggregate a sector's producer price index (in this case manufacturing) by the total of the unit costs of the components of production, as follows:

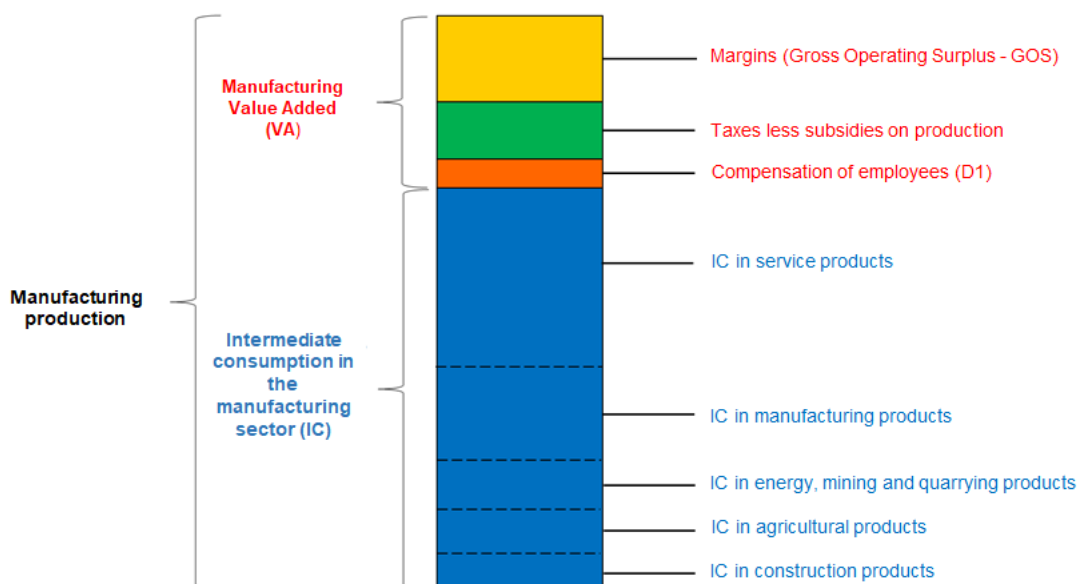
$$\begin{aligned} \text{Producer price index} &= \frac{\text{Production}_{\text{value}}}{\text{Production}_{\text{volume}}} = \frac{\text{margins} + \text{wage costs} + \text{taxes} + \text{intermediate costs}}{\text{Production}_{\text{volume}}} \\ &= \text{Unit margins} + \text{ULC} + \text{per unit taxes} + \text{UCIC} \end{aligned}$$

Changes in producer prices thus depend on changes in the cost of the components of each unit produced: (i) unit margins, i.e. the gross operating surplus per unit of output; (ii) unit labour costs (ULCs); (iii) per unit taxes, i.e. taxes per unit of output net of subsidies; and (iv) unit costs of intermediate consumption (UCICs), i.e. the amount of intermediate consumption incorporated in a unit of output. UCICs can be broken down by type of product using the input-output tables (IOTs) of the national accounts.

For reasons of data availability and homogeneity between countries, we will limit our scope to the period 2000-2015.<sup>a</sup>

### Glossary of terms and indicators used:

#### Components of production as defined in the National Accounts



a. Input-output tables of the annual national accounts, required for breaking down inputs by products and sub-sectors, are generally available with a delay of 36 months in the countries considered here; earlier data is either unavailable or does not allow cross-country comparisons due to the effect of exchange rate movements of national currencies prior to the adoption of the euro in 1999.

**Table 1: Concepts and measures used**

Concept	Formula	Description	Advantage
Producer price index	$\frac{Production_{value}}{Production_{volume}}$	Corresponds to the sale price and includes margins	Examining changes in per unit costs makes it possible to understand all the costs involved in producing a good. It is also possible to ascertain how these contribute to changes in output prices (see above).
ULC	$\frac{D1_{value}}{Production_{volume}}$	Unit labour costs*	
Unit margins	$\frac{GOS_{value}}{Production_{volume}}$	Gross operating surplus per unit of output	
Unit net taxes	$\frac{Taxes - Subsidies_{value}}{Production_{volume}}$	Taxes per unit of output net of subsidies*	
Unit Costs of Intermediate Consumption (UCICs)	$\frac{IC_{value}}{Production_{volume}}$	Cost of intermediate consumption for each unit produced	

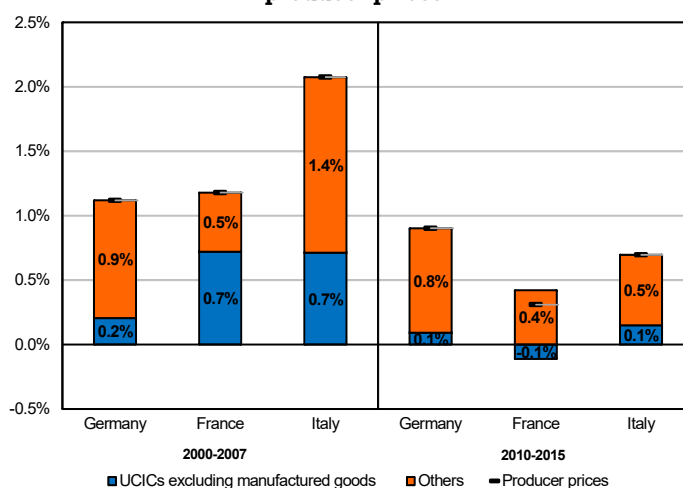
\* In France, the CICE (Competitiveness and Employment Tax Credit), which corresponds to lower labour costs for employers, is taken into account within the "ULC" block.

## 2. In France and Italy, rising costs of service inputs have dampened the manufacturing sector's competitiveness

In the manufacturing sector in both France and Italy, unit costs of intermediate consumption (UCICs – the cost of intermediate consumption for each unit produced) rose considerably prior to the crisis for inputs from other sectors. UCICs increased by 2.8% per year on average between 2000 and 2007 in both countries, while the average trend was much more moderate in Germany, at 0.9%. Before the crisis, it therefore contributed less to the rise in the prices of manufactured goods in Germany than in France and Italy. Between 2000 and 2007, changes in UCICs excluding manufactured goods thus contributed 0.7 percentage points to the average annual change in producer prices in the manufacturing sector in France and Italy, compared with only 0.2 percentage points in Germany (see Chart 1).

Since 2010, UCICs excluding manufactured goods have fallen in France while they have risen in Germany, thus preventing the pre-crisis gap from widening further.<sup>1</sup> In France, UCICs from other sectors contribute much less to changes in producer prices than before the crisis, whereas in Italy, input costs excluding manufactured goods continues to buoy output prices in the manufacturing sector at the same level as in Germany, even though the trend seems to be gradually reversing.

**Chart 1: Contribution of UCICs (excluding manufactured goods) to average annual changes in manufacturing producer prices**



Source: Destatis, Insee, Istat ; DG Trésor calculations.

How to read this chart: In France, UCICs excluding manufactured goods contributed an average of +0.7 percentage points per year to the change in producer prices in the manufacturing sector between 2000 and 2007, and -0.1 percentage points between 2010 and 2015.

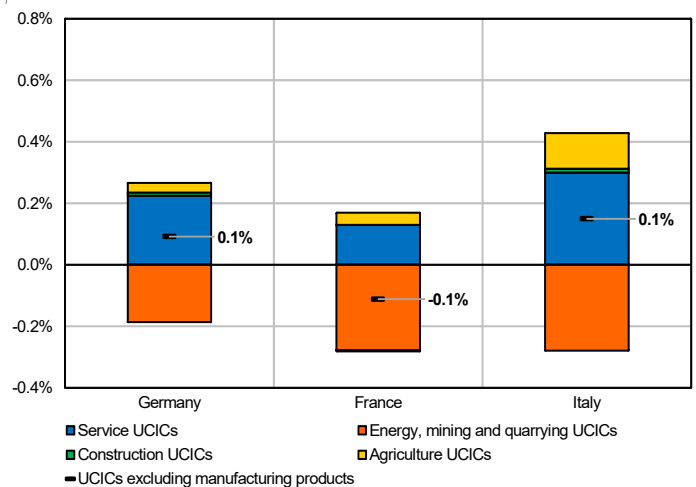
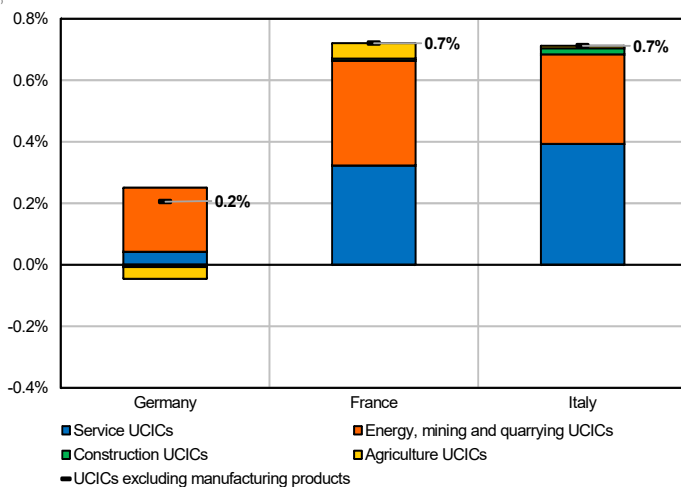
Within UCICs excluding manufacturing products, there are four categories: agricultural products, services, construction, and energy, mining and quarrying. In the three countries studied, energy made a strong contribution to increased producer prices between 2000 and 2007 (see Chart 2a): the price of a barrel of oil rose sharply from €25 in January 2000 to €63 in December 2007.<sup>2</sup> Moreover, in

(1) Unless otherwise stated, the post-crisis period refers to the period between 2010 and 2015. More recent data is not yet available (see Box 1).  
 (2) On the whole, German manufacturing is less sensitive to fluctuating oil prices, whether they rose prior to the crisis or fell in the post-crisis period. The coking and refining sector – which is the main consumer of inputs with respect to the products of extractive activities – represents a smaller portion of the manufacturing industry in Germany (4.0% of manufacturing output in 2010) than in Italy (6.1%) or France (6.6%).

France and Italy, service inputs also make a significant contribution to price increases in the manufacturing sector, in contrast to Germany. During this period, the rise in UCICs

with respect to services is the primary difference between Germany and France, although this change is similar in both France and Italy.

**Chart 2 : Contribution of UCICs excluding manufactured goods to average annual changes**  
**a) 2000-2007** **b) 2010-2015**



Sources: Destatis, Insee, Istat ; DG Trésor calculations.

Since 2010, UCICs of services products used by industry have risen less sharply in France than in Germany, thus preventing the pre-crisis gap from widening further (see Chart 2b). This is not the case in Italy, where these UCICs

are still very much on the rise. The manufacturing sectors of the three countries have also benefited from the fall in oil prices, leading to a reduction in the cost of energy inputs.

### 3. In pre-crisis Germany, wage restraint and deregulation put strong downward pressure on service prices

The pre-crisis difference in changes to service input prices in France and Italy compared to Germany can be explained by:

- A difference in increases in wages for services, which are very low in Germany.
- Tighter margins in the German professional business services sector (accounting, legal services, architecture, engineering), following deregulation in this sector, which reined in output prices.

#### 3.1 In France and Italy, pre-crisis services prices reflected rising wages

The strong trend in service UCICs in France and Italy before the crisis can partially be attributed to the wage increases during the period but also to actions relating to margins. ULCs for services were very buoyant in Italy and France prior to the crisis, whereas Germany experienced strong wage restraint in this same sector. This is reflected in the

selling price of services and, ultimately, in service UCICs in the manufacturing sector (see Chart 3a).

Since the crisis, ULCs for services in Germany have been more dynamic and service UCICs have contributed more to manufacturing prices in Germany than in France (see Chart 3b). In Italy, ULCs for services have slowed, but the increase in margins for Italian companies, which are still high, continue to fuel an increase in prices,<sup>3</sup> service UCICs and, ultimately, manufacturing sector prices.

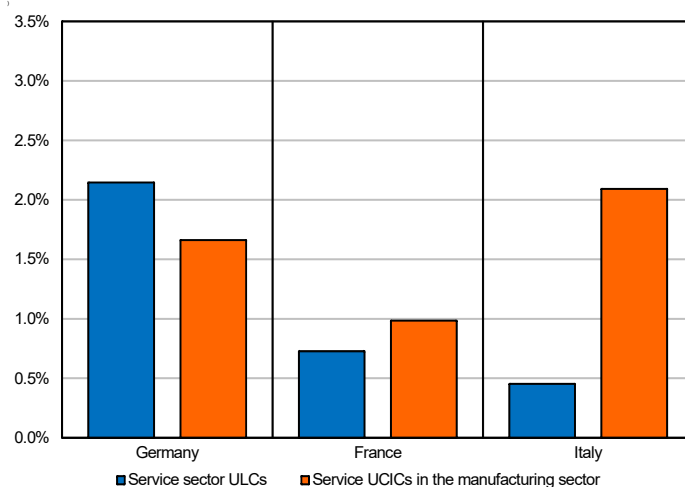
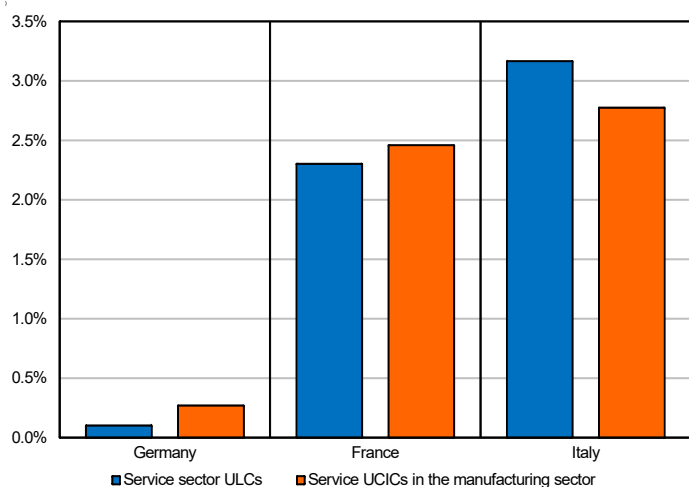
Moreover, since the crisis, France has seen a significant structural effect, via an increase in volumes of inputs in service consumed for the unit production of manufactured goods (a rise in the technical coefficient). This contributes to higher UCICs in industrial services over and beyond the momentum resulting from the output prices of services alone. This structural effect – which contributes +0.9 percentage points to the 1.0% growth in service UCICs in the manufacturing industry in post-crisis France – was only observed to a small extent pre-crisis, and is added to

(3) In 2012, the Monti government also introduced a series of revenue measures to consolidate Italy's public finances, including a rise in local property tax (IMU) estimated at €11bn, which has had an upward impact on producer prices in the sub-sector linked to real estate activities, whose primary activity is the leasing and operation of owned and rented real estate, and ultimately on the service inputs of the Italian manufacturing industry.

the "price" effect. This effect may also have been present in Italy and Germany<sup>4</sup> between 2010 and 2015, and it very

much reflects the outsourcing of service tasks by manufacturers.

**Chart 3 : Average annual change in service sector ULCs and service UCICs in the manufacturing**  
**a) 2000-2007** **b) 2010-2015**



Sources: National statistical institutions; DG Trésor calculations.

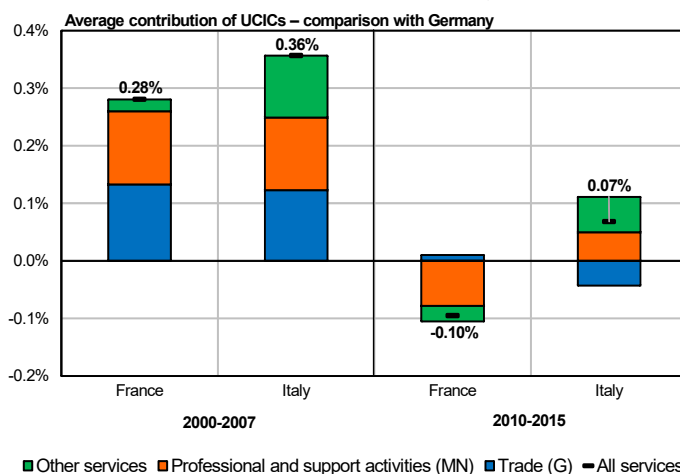
### 3.2 In Germany, the deregulation of professional business services has reined in the costs of these inputs to industry

Among the various service sub-sectors, two stand out. Each contributes to manufacturing producer prices in France and Italy rising more than a tenth of a percentage point faster than in Germany over the pre-crisis period (see Chart 4). They are Sector G "Wholesale and retail trade, repair of motor vehicles and motorcycles"<sup>5</sup> and sector MN "Professional and support activities" (generally referred to as "Business support services").<sup>6</sup>

These sectors ceased to be a burden on France's relative output prices starting in 2010. The growth in input costs from the business support services sector has even become more favourable in France than in Germany (see Chart 4). This is not the case in Italy, where the business support services sector continues to weigh slightly on manufacturing output prices compared with Germany.

Prior to the crisis, producer prices in the business support services sector rose at a significantly slower pace in Germany due to pro-competitive reforms.

**Chart 4 : Average annual contribution of service UCICs to changes in producer prices in the manufacturing sector – comparison with Germany**



Source: National statistical institutions; DG Trésor calculations.

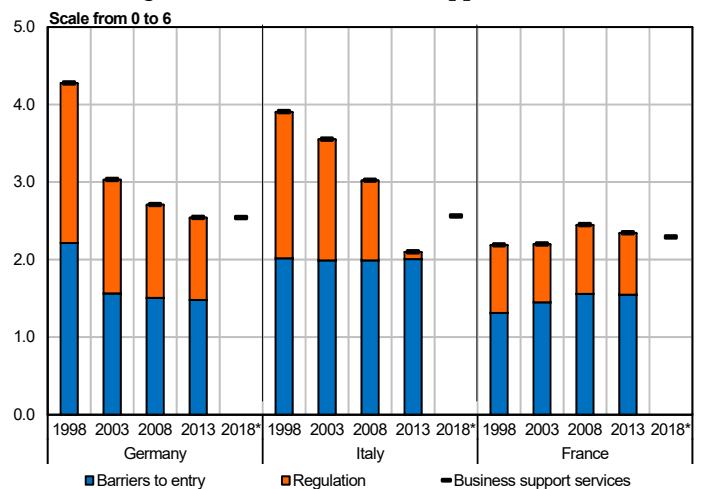
(4) However, the absence of an input-output table in volume for these two countries prevents us from distinguishing between the "price effect" and the "structure effect".  
 (5) There was a significant and unexplained pre-crisis difference in the growth of intermediate consumption in trade in the manufacturing industry between France and Germany. In fact, manufacturing industry inputs in sector G "Wholesale and retail trade, repair of motor vehicles and motorcycles" collapsed in Germany between 2000 and 2007 (-72% in nominal terms) while they rose sharply in France during that same period (+40%). This differential is all the more surprising given that German manufacturing output grew in volume between 2000 and 2007, while it decreased in France. Since 2010, however, this gap has disappeared.  
 (6) For the pre-crisis period, we do not have a greater level of detail of this sector for Germany in the IOTs.

This difference between France and Germany is primarily due to a difference in the margins of companies in the MN sector, since the trend in ULCs in this sector is similar for both countries. Within the MN sub-sector, the MA sector (legal, accounting, management, architecture, engineering, control and technical analysis activities) is the main contributor to the gap between France and Germany and to the difference in margins dynamics, which has put a drag on the French manufacturing sector. In Germany, the sector has been undergoing strong deregulation since the 2000s. The deregulation of business support services was achieved through a strong easing of entry barriers (see Chart 5): all business services sub-sectors covered by the OECD's Product Market Regulation (PMR) survey saw their quotas totally removed between 1998 and 2003. This may have increased competition, via the increase in the number of players in each market,<sup>7</sup> which is likely to be the reason behind lower margins of companies in the sector: in the MA sector, margin rates fell by 4 percentage points between 2000 and 2007 and this trend became even more pronounced thereafter (in total, margin rates of companies in the sector fell by 27 percentage points of VA in Germany between 2000 and 2015). Less regulated than in Germany in 2000, the margins of companies in business support services were then significantly lower in France.<sup>8</sup> The contribution of service UCICs to the competitiveness differential between France and Germany therefore appears to be mainly due to Germany's catch-up effect.

In Italy, the gap in producer prices in the business support services sector observed before the crisis with Germany stems primarily from a difference in ULC trends (specifically in connection with the sharp decline in productivity in the sector in Italy), similar to the services sector as a whole. Furthermore, Italy, like Germany, has been carrying out a major deregulation of its professional business services sectors since the early 2000s,<sup>9</sup> but deregulation in Italy

seems to have had little effect on the margins of companies in this sector, which remain stable at a high level.

**Chart 5: Regulation in the business support services sector**



Source: OECD, PMR survey.

How to read this chart: The higher its PMR index, the more regulated a sector is considered to be (on a scale from 0 to 6). For example, in 1998, the PMR index for business support services (a composite indicator of the regulation of the architectural, engineering, legal and accounting professions) was higher in Germany (4.3 points) than in France (2.2 points), reflecting greater regulation of the sector in Germany.

\* The PMR survey for 2018 introduced a change in methodology. Therefore, caution is recommended when comparing 2018 figures with those of previous years. The figure for 2018 corresponds to an aggregate of the level of regulation of the professions of lawyer, notary, accountant, architect, engineer and real estate agent.

Since 2010, in Germany, ULCs have accelerated sharply in the MA sector (and more generally for services as a whole, see Chart 3b) and the margin trajectories in this sector are no longer an element of difference between France and Germany, so that producer prices are more buoyant in Germany. As a result, the contribution of business support services UCICs is lower in France than in Germany (see Chart 4) compared to the pre-crisis period. In post-crisis Italy, producer prices in the sector are becoming more in line with Germany.

(7) At the end of the 1990s, this sector seemed highly regulated according to the OECD's PMR surveys. This diagnosis is valid for all service sub-sectors covered by the survey (whose scope corresponds well to the MA sector): accounting, legal services, engineering and architecture. These sub-sectors presented significant barriers to entry (qualification requirements, quotas, exclusive rights and/or compulsory membership of a professional association). During the 2000s, these sectors were heavily deregulated, and in 2008 reached a level of regulation close to that of France, according to the OECD.

(8) About 20% in France compared to some 60% in Germany. It is difficult to make international comparisons in terms of margin rates from national accounting data. Indeed, despite the harmonisation of the different national accounting systems in Europe, methodological differences remain. Here, however, the difference in margin rates in the MA sector is so considerable between France and Germany that it does not seem to be the result of a single statistical artefact. In any event, the extent of the variations is less likely to be affected by statistical problems and can therefore be compared between France and Germany.

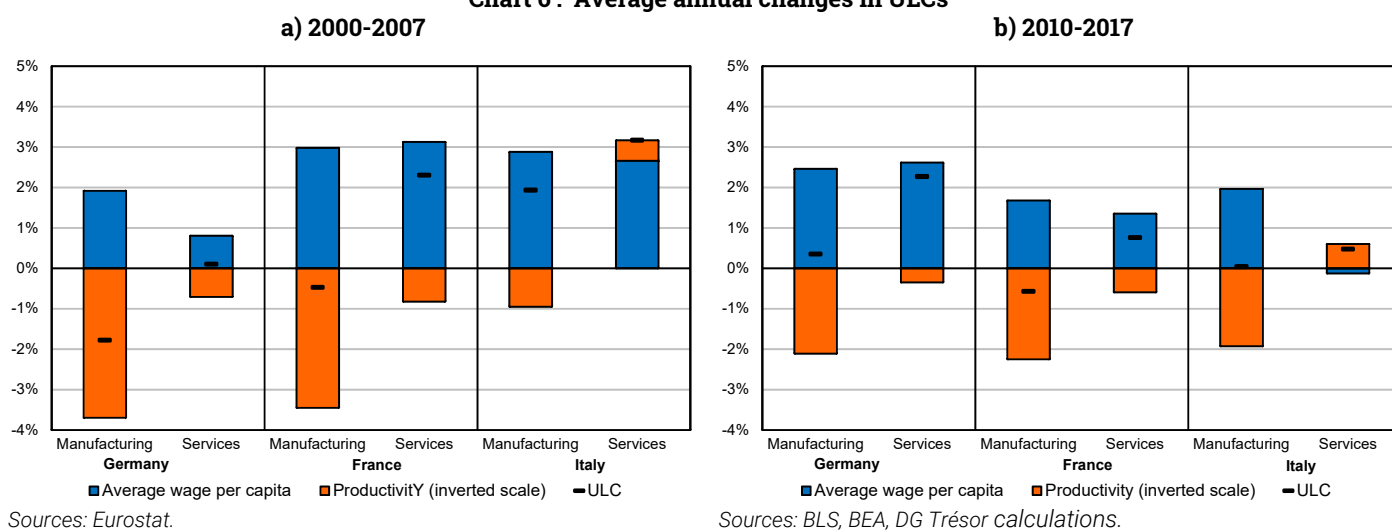
(9) However, the component of the PMR associated with barriers to entry, which is higher than in France in 1998, is not decreasing.

## Box 2: Why are ULCs more dynamic in the services sector than for industry?

According to Balassa and Samuelson (1964), in the tradable goods sector subject to international competition, productivity gains are faster than in the sheltered sector and allow wage levels to rise without loss of competitiveness. Owing to inter-sectoral labour mobility, these wage increases spread to the sheltered services sector, where productivity gains are lower, implying greater ULC momentum than in the exposed sector. Pre-crisis, this is the case in France and Italy.<sup>a</sup> On the contrary, in Germany, there was a difference in wage trends between the services and industrial sectors, reflecting more productivity developments, so that ULCs have remained moderate in services. The pre-crisis period was also marked by strong wage restraint in Germany, which trade unions adopted starting in the mid-1990s to combat unemployment and increase competitiveness, and which was amplified in the 2000s by the Hartz<sup>b</sup> reforms.

Since 2010, the trends have changed, with higher wage increases in Germany than in the other two countries. In France and Italy, wage trends, which are more buoyant in industry than in services, appear to be more in line with productivity differences between sectors, in addition to being more restrained. Changes in ULCs in France were also tempered by the introduction of the Competitiveness and Employment Tax Credit (CICE) in 2013, as well as by the Responsibility and Solidarity Pact in 2015.

Chart 6 : Average annual changes in ULCs



- a. Since the mid-1990s, Italian labour productivity has experienced a sharper and earlier slowdown than its main partners, and even a decline in the services sector, which contributes to the rise in Italian ULCs. See H. Mrabet (2016), "Why is Italian productivity so weak?", *Trésor-Economics*, No. 170.
- b. See D. de Waziers (2017), "Rationale for the new wage momentum in Germany", *Trésor-Economics*, No. 202.

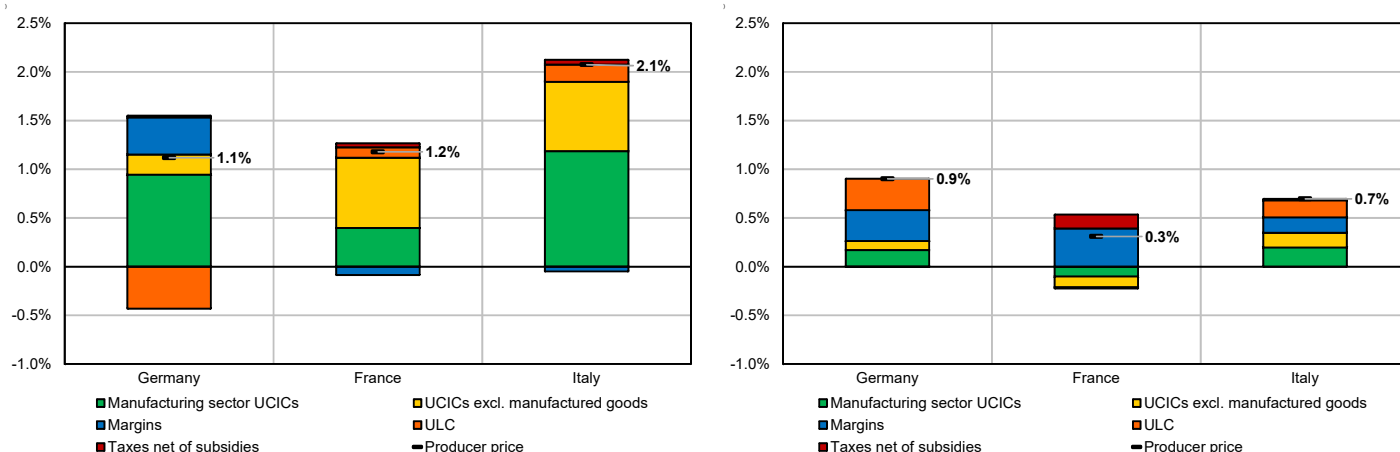
## 4. French and Italian manufacturers have reduced their pre-crisis margin rates, but not enough in Italy

Both French and Italian industries experienced strong momentum in their non-manufacturing input costs prior to the crisis, but output prices remained contained in France, while they accelerated in Italy (see Chart 6a). In France, manufacturing firms reduced their margin rate in order to contain their prices: this rate thus deteriorated by 2.4 pts of value added (VA) over the period. At the same time, the effect of the development of the ULCs in their sector was rather neutral on producer prices, which contrasts with the dynamism of the ULCs in the services sector. In Italy, the margin effort of manufacturing firms was of the same order as in France (-3.1 pts of VA), but this remained insufficient

to moderate the rise in producer prices, which were more dynamic than in France and Germany. At the same time, transalpine firms were faced with very buoyant labour costs in their own sector, which rose at a rate close to that of services. Manufacturing output prices increased by 2.1% on average in Italy between 2000 and 2007, compared with 1.2% and 1.1% in France and Germany, and weighed on competitiveness.<sup>10</sup> The evolution of manufacturing output prices was reflected in the change in export prices and price competitiveness for euro area countries, which share the same currency.

(10) In pre-crisis France, manufacturing inputs contributed less to increasing manufacturing producer prices than in Italy or Germany, mainly due to inputs in electrical, electronic and computer products (contribution of -0.2 percentage points in France compared to 0.0 percentage points in Italy and Germany). This difference could be due to lower computerisation of French industry, although this is not confirmed by investment rates in ICT equipment, or to a difference in volume-price sharing.

**Chart 7 : Contributions to average annual price developments in the manufacturing sector**  
a) 2000-2007 b) 2010-2015



Sources: Destatis, Insee, Istat ; DG Trésor calculations.

Note: In France between 2010 and 2015, the effect of the CICE was shifted to the "ULC" block rather than the "taxes/subsidies" block because it corresponds to a reduction in the cost of labour for the employer.

In Germany, the combination of intense wage restraint in the manufacturing sector and weak growth in input costs excluding manufacturing goods limited the rise in producer prices while allowing manufacturing firms to increase their margins sharply, by 8.2 pts of VA between 2000 and 2007.

Since 2010, the trends have been different: producer prices in Germany have risen at a faster rate than in its two neighbours (see Chart 6b). In Germany, labour costs have in fact been accelerating since 2012 and have made a positive contribution to the rise in output prices in the manufacturing sector, despite a slower increase in the sector's margins (+0.9 percentage points of VA between

2010 and 2015, compared to +8.2 percentage points between 2000 and 2007). In France, firms were able to widen their margins (+4.2 percentage points of VA between 2010 and 2015 against -2.4 percentage points between 2000 and 2007).<sup>11</sup> Lastly, in Italy, the pressure exerted by the still buoyant dynamics of UCICs excluding manufactured goods, compared to its two neighbours, has not allowed a significant increase in margins (+0.7 percentage points of VA between 2010 and 2015 against -3.1 percentage points between 2000 and 2007).

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(11) For France, the ULCs commented on here systematically take into account the CICE's effect in the manufacturing sector.

**Publisher:**

Ministère de l'Économie et des Finances  
Direction générale du Trésor  
139, rue de Bercy  
75575 Paris CEDEX 12

**Publication manager:**

Bertrand Dumont

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Jean-Luc Schneider  
(01 44 87 18 51)  
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**English translation:**

Centre de traduction des ministères économique et financier

**Layout:**

Maryse Dos Santos  
ISSN 1962-400X  
eISSN 2417-9698

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